Four new forest Millipedes from Lesotho and the Eastern Cape

by

R. F. LAWRENCE

Albany Museum, Grahamstown, South Africa

INTRODUCTION

The genus *Gnomeskelus* is one of the largest and most widespread of the Diplopod genera in Southern Africa; it ranges over almost the entire coastal margin of southern Africa from north of Lourenço Marques in the east to the Cape Peninsula in the west. It is an indicator of indigenous forest and is thus completely absent from the western coastline of southern Africa north of Cape Town.

Four new species of this genus are described here, three from the eastern Cape, one from Lesotho, and a list is given of the species known at the present time. The types of all four species are deposited in the Albany Museum, Grahamstown.

CONTENTS

Genus **Gnomeskelus** Attems

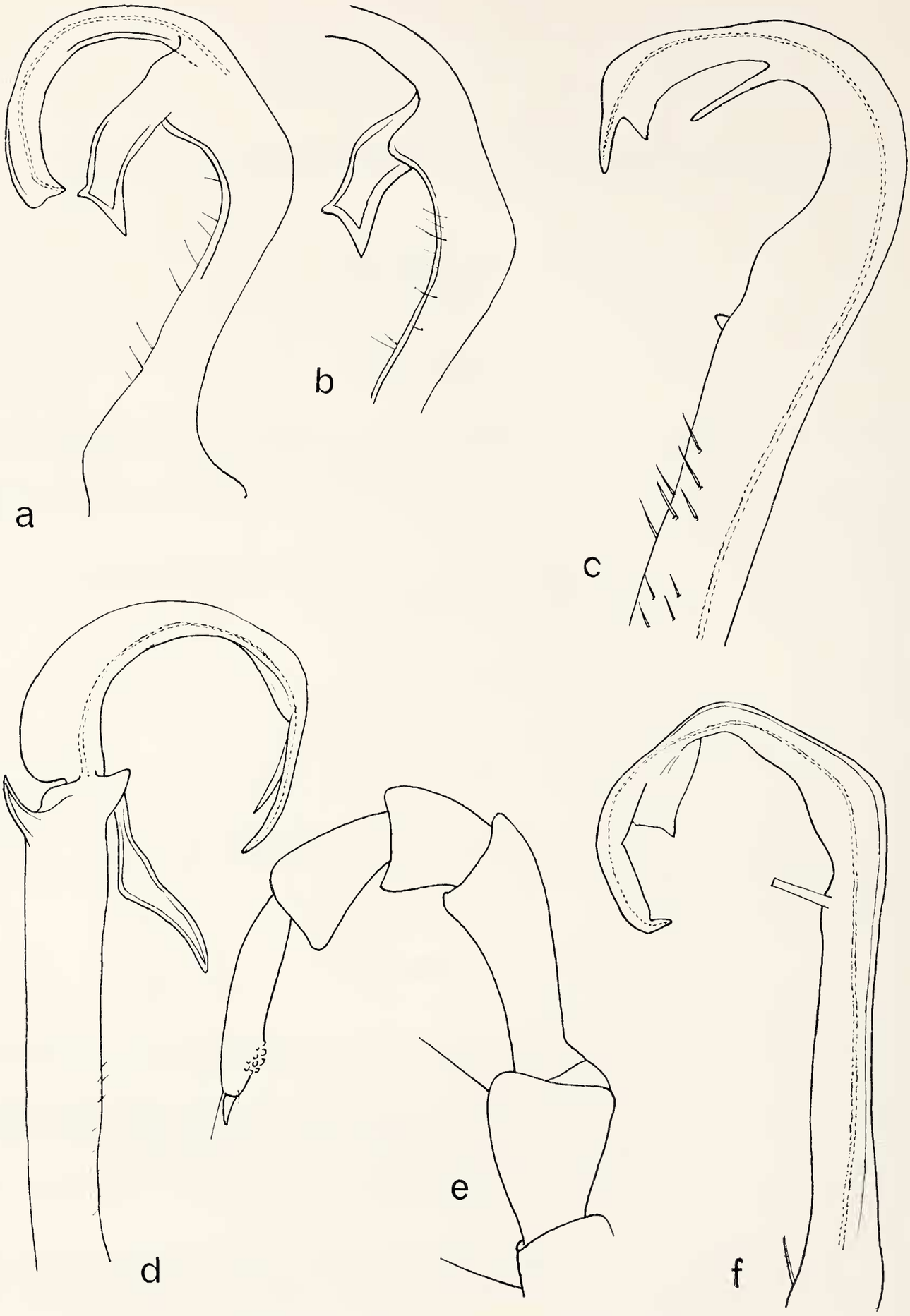
Gnomeskelus outeniqua spec. nov. (Fig. 1*a*, *b*)

Holotype 1 ♂, paratypes 2 ♂♂, Natures Valley, mouth of the Grootrivier, Cape Province, collected R. F. Lawrence, 20th September 1969.

Colour in general dirty white to light cream, collum with a narrow light violet anterior and posterior border, body segments with a similar border but only posteriorly; legs in middle of the body with the basal segments mottled violet, the remainder dirty white.

Head. Antennae long and slender, the penultimate segment subequal to the two preceding ones together.

Body with very fine, microscopically small setae, collum with two transverse rows of a few setae each, one along anterior margin, the second in the middle of the segment. Body segments with one row posterior to the transverse suture. Keels of all segments very weak, almost completely obsolete.



EXPLANATION OF THE TEXT-FIGURE

Gnomeskelus outeniqua nov. spec.: *a*, gonopod aboral view, *b*, the parsolanomerit in oral view; *Gnomeskelus graemi* nov. spec.: *c*, gonopod, aboral view:
Gnomeskelus basuticus nov. spec.: *d*, gonopod, oral view; *e*, leg XVIII;
Gnomeskelus montifelis nov. spec. *f*, gonopod, aboral view.

Legs rather short, with abbreviated segments; those in the middle of the body with the whole of the inferior surface of tarsus (except for a small area at the base and apex) with transversely striated spherical nodules crowned with a short, smooth, thick cone, the nodules in general resembling those figured for *G. tembulicus* Lawrence (1963, p. 301, fig. 2*f*); tibia with a row of 4, patella with 3, femur with 2—4 near the distal apex only; segments of the legs without processes or tubercles.

Gonopods as in fig. 1*a* (aboral) and 1*b* (oral) view; no tibio-tarsus; parsolanomerit large and partly divided at its apex, the distal fork small and inconspicuous; in one specimen there is no division, and the structure ends in a simple large triangle which is sharply pointed.

On the oral side of the femur there is a bluntly rounded projection opposite the origin of the parsolanomerit.

Dimensions. Total length 11 mm, width about 9 mm.

The species apparently most closely resembles *G. bicornis* Schubart from Van Staden's Pass, near Port Elizabeth. It differs in having the processes at the apex of the parsolanomerit only feebly developed; there is no marked constriction dividing the femur from the prefemur of the gonopod as in *bicornis*.

Gnomeskelus graemi nov. spec. (Fig. 1*c*)

Holotype 1 ♂, paratype 1 ♂, Dassiekrans, Grahamstown, Cape Province, collected R. F. Lawrence, 4th October 1967.

Colour uniformly pale off-white, without markings (spirit specimens).

Head. Antennae moderately long, the penultimate segment a little shorter than the two preceding ones together and somewhat incrassate.

Body. Collum and the remaining segments with 1 transverse row of very fine short setae; the keels visible at the sides but small and sharp, not produced but ending at the postero-lateral angles in a small sharp tooth which is however very short.

Legs with neither tubercles (swellings) nor processes on their ventral surfaces; the modified setae (spherical nodules) of the inferior surfaces of the segments more triangular in shape, the pointed cone at the apex of each, long, almost as long as the basal striated portion; the legs in the middle of the body with the basal and apical fourth of the tarsi free of nodules, tibia with nodules only in the distal half, patella and femur without any.

Gonopods rather simple, fig. 1*c*, resembling in general those of *burius* Verhoeff and *arcuatus* Verhoeff from Natal; no tibio-tarsus; parsolanomerit absent or represented by a small triangular tooth, solanomerit with a very slender lateral branch, femur and prefemur not divided by a constriction, sperm canal clearly visible.

Dimensions. Total length about 12·7, width 1·3 mm.

Additional material: 24 ♂♂ and ♀♀ from the type locality, collected R. F. Lawrence, 13th October 1969. The colouring of these forms is as follows:

Antennae, collum and body segments dorsally varying from light brown with a reddish tinge to dirty yellow and off-white, a narrow blackish stripe down the middle of the dorsum; head, sides of body and legs uniformly pale.

This small form occurs in forest humus side by side with *G. hewitti*, a much larger unrelated species.

Gnomeskelus basuticus nov. spec. (Fig. 1*d*, *e*)

Holotype 1 ♂, Masite Mountain, altitude ±5,500, near Morija, Maseru district, Lesotho, collected by J. Hewitt.

Colour. Dirty white without darker markings, probably faded in alcohol; antennae a little infuscated with violet.

Head. Antennae moderately long, the penultimate segment subequal to the two preceding ones together.

Collum and body. Collum with some fairly long fine setae scattered irregularly in anterior half of segment; all body segments dorsally quite naked, even the last one, but telson below with 2—3 pairs of distinct setae on the valves, pygidium with a single pair; keels fine and distinct but not at all prominent.

Legs moderate in length but distinctly longer than in the two preceding species, the segments swollen at their apices where, especially ventrally, there are rounded projections. No spherical nodules except on a low rounded swelling near the distal end of the tarsus ventrally (leg XII), and then only a few, fig. 1*e*; proximally to these a few along the tarsus with the basal swollen portion elongate, not spherical, and surmounted by a thick pointed spine which is longer than the swollen base of the nodule.

Gonopods as in fig. 1*d* seen in oral view, the femur slender, long, with almost parallel sides, a distinct constriction separating the solanomerit from the femur, as in *G. armiger* Schubart from Wellington, Cape (1956, p. 69 fig. 42); the tibio-tarsus in the form of a short sharp tooth.

Dimensions. Total length 11·5 mm, width 1 mm.

In the opinion of the writer, as also expressed in a previous paper (1966, p. 249), Schubart's subgenus *Pristomeskelus*, should be reserved for the following six species only: *penicillatus* Attems, *ceresinus* Attems *armiger* Schubart, *clavatus* Attems, *krugeri* Lawrence and the above species. They are all distinguished by having the femur of the gonopods separated from the distal apex of the appendage (solanomerit) by a distinct constriction. In the detailed construction of the gonopods this species from Lesotho does not appear to resemble any of the remaining species of *Pristomeskelus* Schubart.

Gnomeskelus montifelis nov. spec. (Fig. 1*f*)

Holotype 1 ♂, paratypes 2 ♂♂, 2 ♀♀, Katberg, Winterberg Mountains, collected by J. Hewitt, January 1927.

Colour, probably faded in alcohol, a uniform dirty white or pale yellow without darker markings.

Head. Antennae not elongate, penultimate segment shorter than the two preceding ones together.

Body. Collum with several transverse rows of minute setae, body segments dorsally with only one row posterior to the transverse suture, last segment with fairly numerous setae. Keels almost obsolete but visible.

Legs moderate to short, tarsus however fairly long and slender, with spherical nodules ventrally except on basal third or apical fifth of the segment; in addition with a series of fairly long and strong curved setae on the ventral surface, these setae shorter and less numerous on the remaining segments of the legs; tibia with spherical nodules only in apical half, patella

and femur without these; patella-femur without blunt apical processes or only slightly enlarged distally, femur a little more so than the remaining segments.

Gonopods as in fig. 1*f* seen in aboral view, base of the femur apparently with only one large setose-spine, parsolanomerit short, slender, bacilliform, the whole gonopod unlike that of any other species except for the solanomerit which resembles that of *auriculatus* Lawrence from Natal.

Dimensions. Total length about 13 mm; width 1·2 mm.

The Genus **Gnomeskelus** Attems

The genus consists of a large number of species, the great majority of which are limited to the litoral or sublitoral forests of southern Africa. When the genus was first proposed in 1928 only 13 species were described while at the present time 82 are known. It affords a good example of one genus of a family greatly exceeding all others in numbers of species, the great proliferation of forms taking place at the extreme south of the African continent.

A parallel case exists among the Spirostreptomorph millipedes of the family Odontopygidae where the genus *Spinotarsus* with 96 species far outstrips in numbers any of its congeners in southern Africa; while *Gnomeskelus* is strictly limited to indigenous forest however, most of the species occurring in coastal forest or in forests not more than 50 miles inland, *Spinotarsus* is less dependent on humidity and shade, flourishing in regions of prairie, bushveld or thornveld such as are found in the lowveld of the Kruger National Park; its penetration of the indigenous montane and coastal forests is probably secondary and incidental. With respect to *Gnomeskelus* on the other hand, as can be seen from the list of species, only eight of the 82 species are found in the Transvaal and of these only two occur in the lowveld, the remaining species living at fairly high altitudes in the mist-belt forests which remain on the slopes of the northern extension of the Drakensberg Range.

Both these genera, in spite of their numerous species, are still incompletely known and the number of forms listed will probably eventually reach a half again of the present total. More species than have already been described may be expected to occur between Port Elizabeth and the Cape Peninsula.

In most cases, and this is also true of the Odontopygid *Spinotarsus*, the various species of *Gnomeskelus* are localized, occupying very limited geographical areas and easily distinguishable from each other on the basis of clearcut differences in the ♂ gonopods. An exception is to be found in the case of *G. tuberosus* Attems, a large, mainly litoral species, in which a number of forms have been described, with the gonopods conforming to a single general pattern. A dozen such forms, deviating from the normal structure of the gonopod in minor details have already been described as subspecies; these range from Richards Bay to Port St. Johns and no doubt others will be found.

Although it seems likely that according to P. M. Johns (personal communication) *Gnomeskelus* is a synonym of *Stenauchenius* Attems, described from a single female from Port Elizabeth, it would be premature to accept this before it is definitely known that the female type of *Stenauchenius* has been compared with various females of *Gnomeskelus*. The author of the two genera, C. von Attems, must have had females of both before him for comparison when erecting his new genus *Gnomeskelus* in 1928, and it may therefore be supposed that he considered them to be different.

A LIST OF THE SPECIES OF GNOMESKELUS ARRANGED UNDER PROVINCES

Natal—Zululand and Moçambique	*Transvaal*	*Cape (including the Transkei)*	*Lesotho*
arcuatus Verhoeff 1939	*arator* Lawrence 1962	*armiger* Schubart 1956	*basuticus* Lawrence 1969
attemsii Verhoeff 1939	*cyniceps* Lawrence 1958	*bacillifer* Attems 1944	
auriculatus Lawrence 1953	*krugeri* Lawrence 1966	*bicornis* Schubart 1956	
bifurcatus Lawrence 1953	*rudebecki* Lawrence 1959	*ceresinus* Attems 1928	
brevipes Lawrence 1953		*clavatus* Attems 1928	
brincki Schubart 1956		*elizabethae* Lawrence 1963	
burius Verhoeff 1939	*stuckenbergi* Lawrence 1958		
circulipes Verhoeff 1939			
cyclocanthus Lawrence 1958	*skukuzae* Lawrence 1966	*fitzsimonsi* Lawr. 1959	
dentipes Attems 1928			
edentulus Lawrence 1953	*transvaalicus* Lawrence 1958	*globifer* Attems 1928	
fluvialis Lawrence 1958	*trichardti* Lawrence 1962	*graemi* Lawrence 1969	
forcipifer Lawrence 1953		*hewitti* Lawrence 1963	
glaber Lawrence 1958		*inermis* Lawrence 1963	
gonarthrodus Lawrence 1962		*kambianus* Lawrence 1963	
harpagonifer Verhoeff 1939		*mixtus* Attems 1944	
jaculator Lawrence 1958		*montifelis* Lawrence 1969	
krausi Lawrence 1962		*outeniqua* Lawrence 1969	
lawrencei Verhoeff 1939		*penicillatus* Attems 1927	
larvatus Lawrence 1962		*puteinus* Attems 1928	
latzeli Verhoeff 1939		*repandus* Attems 1928	
laevigatus Lawrence 1953		*rhodobates* Attems 1928	
maritimus Lawrence 1962		*silvaticus* Attems 1928	
medius Verhoeff 1939		*spiculifer* Lawrence 1953	
minor Lawrence 1958		*tembulicus* Lawrence 1963	
montivagus Verhoeff 1939		*tuberosus tridens* Lawrence 1962	
multidentatus Verhoeff 1940		*tuberosus eweri* Lawrence 1962	
natalicus Attems 1928		*tuberosus furculatus* Verhoeff 1937	
origensis Lawrence 1953		*tuberosus globulatus* Attems 1927	
petersii Verhoeff 1940			
processiger Lawrence 1953			
pugnifer Lawrence 1953			
retrusus Schubart 1956			
setosus Verhoeff 1939			
spectabilis Verhoeff 1940			
spinifer Attems 1928			
subterraneus Lawrence 1962			
tenuipes Lawrence 1953			
tereticornis Lawrence 1962			
tuberosus tuberosus Attems 1927			
tuberosus hamuliger 1939			
tuberosus urbanus Lawrence 1962			
tuberosus clivicolus Lawrence 1962			
tuberosus falcifer Verhoeff 1939			
tuberosus microdens Lawrence 1962			
tuberosus serratus Verhoeff 1939			
tuberosus tristriatus Attems 1938			

REFERENCES

Attems, C., 1927. "Wissenschaftliche Ergebnisse R. Grauer in Zentral Afrika", *Ann. Naturh. Mus. Wien.*, **41**:58.

Attems, C., 1928. "The Myriopoda of South Africa", *Ann. S. Afr. Mus.*, **26.**

Attems, C., 1934. "The Myriopoda of Natal and Zululand", *Ann. Natal Mus.*, **7**:459—522.

Attems, C., 1944. "Neue Polydesmoidea", *Zool. Anz.*, **144**:223—251.

Kraus, O., 1966. "Phylogenie, Chorologie and Systematik der Odontopygoideen", *Abh. Senckenb. naturf. Ges. N. S.*, **12**:1—143.

LAWRENCE, R. F., 1953. "A revision of the Polydesmoidea (Diplopoda) of Natal and Zululand", *Ann. Natal Mus.*, **12**:292—349.
LAWRENCE, R. F., 1958. "Contributions to the Myriopoda of Natal and Zululand", *Ibid.* **14**(2):279—301.
LAWRENCE, R. F., 1959. "A collection of Arachnida and Myriopoda from the Transvaal Museum". *Ann. Transvaal Mus.* **23**(4):363—386.
LAWRENCE, R. F., 1962. "New Polydesmoidea (Diplopoda) from South Africa", *Ann. Natal Mus.*, **15**(14): 141—165.
LAWRENCE, R. F., 1963. "New Myriopoda from Southern Africa", *Ibid*, **15**(23):297—316.
LAWRENCE, R. F., 1966. "The Myriopoda of the Kruger National Park", *Zool. Africana*, **2**(2):225—262.
SCHUBART, O., 1956. "Diplopoda I. Proterospermophora", *S. African Animal Life*, **3**:12—86.
VERHOEFF, K. W., 1939. "Über Südafrikanische Polydesmoideen", *Ann. Natal Mus.*, **9**:183—201.
VERHOEFF, K. W., 1939. "Polydesmoideen, Colobognathen und Geophilomorphen aus Südafrika, besonders den Drakensbergen, Natal", *Ibid.*, **9**:203—224.
VERHOEFF, K. W., 1940. "Aliquid novi ex Afrika, I. Polydesmoidea und Colobognatha", *Zool. Anz.* **130**: 104—119.
VERHOEFF, K. W., 1940. "Aliquid novi ex Afrika, II. Zur Kenntnis der Südafrikanischen gnomeskelus." *Ibid.*, **131**:10—18.